AMENDMENTS TO THE CLAIMS:

The listing of claims shown below will replace all prior versions, and listings of claims in the Application:

1. (Withdrawn) An electronic system for selectively detecting and identifying a plurality of chemical or biological species, comprising:

an array of nanostructure sensing devices containing:

a first nanostructure sensing device comprising a first nanostructure and having a selectivity for sensing a first species;

a second nanostructure sensing device comprising a second nanostructure and having a selectivity for sensing a second species; and

a processing system to deconvolute and analyze signals from the array to provide identification of chemical or biological species.

2. (Withdrawn) The electronic system of claim 1, further comprising: at least two contact electrodes in the first nanostructure sensing device, the contact electrodes electrically connected by the first nanostructure; and at least two contact electrodes in the second nanostructure sensing device, the contact electrodes electrically connected by the second nanostructure.

3. (Withdrawn) The electronic system of claim 2, wherein the contact electrodes comprise a material selected from the group consisting of aluminum, copper, titanium and tungsten.

4. (Withdrawn) The electronic system of claim 2, further comprising a protective coating on the contact electrodes.

5. (Withdrawn) The electronic system of claim 4 wherein the protective coating is selected from the group consisting of silicon oxides, metal oxides, polymer films, and nonvolatile organics.

6. (Withdrawn) The electronic system of claim 2, further comprising a gate electrode in the first nanostructure sensing device.

7. (Withdrawn) The electronic system of claim 2, further comprising a counter electrode, electrically isolated from the contact electrodes, in the first nanostructure sensing device.

8. (Withdrawn) The electronic system of claim 7, further comprising a pseudo-reference electrode, electrically isolated from the contact electrodes, in the first nanostructure sensing device.

9. (Withdrawn) The electronic system of claim 1, wherein the first nanostructure and the second nanostructure are selected from the group consisting of single-walled nanotubes, multi-walled nanotubes, nanofibers, nanowires, nanocoils, nanospheres, nanocages, nanococoons, nanohorns, nanoropes, nanotori, nanorods, nanoplatelets, and other extended molecules such as polymers, dendrimers, organometallics, fullerene-like molecules, and combinations thereof.

10. (Withdrawn) The electronic system of claim 1, wherein the first nanostructure and the second nanostructure have approximately linear forms.

11. (Withdrawn) The electronic system of claim 1, wherein the first nanostructure and the second nanostructure comprise elements selected from the group consisting of boron, carbon, combinations thereof, and combinations with nitrogen.

12. (Withdrawn) The electronic system of claim 1, further comprising third and fourth nanostructure sensing devices having the same selectivity for sensing as the first nanostructure sensing device, wherein the first nanostructure sensing device is at least partially exposed to the plurality of species and to water, the third nanostructure sensing device is shielded from the plurality of species but not from water, and the fourth nanostructure sensing device is shielded from the plurality of species and from water.

13-21. (Cancelled)

22. (Currently Amended) ~~The method of Claim 13, further comprising modifying at least two nanostructure sensing devices to have the same selectivity for sensing, providing shielding impermeable to at least the plurality of chemical species to at least one of the at least two nanostructure sensing devices and allowing at least one of the at least two nanostructure sensing devices to be at least partially exposed to at least the plurality of chemical species.~~

A method of fabricating an electronic system for selectively detecting and identifying a predetermined number of chemical species, comprising the steps of:

(a) providing an array of nanostructure sensing devices, each nanostructure sensing device comprising at least one nanostructure and at least two contact electrodes, wherein the at least one nanostructure provides electrical coupling between the at least two contact electrodes; and

(b) modifying selectivity for sensing of the nanostructures within at least a portion of the array of nanostructure sensing devices, such that at least one nanostructure sensing device produces a measurably changed signal when exposed to the chemical species; and

(c) modifying at least two nanostructure sensing devices to have the same selectivity for sensing,

(d) providing shielding impermeable to at least the plurality of chemical species to at

least one of the at least two nanostructure sensing devices and

(e) allowing at least one of the at least two nanostructure sensing devices to be at least partially exposed to at least the plurality of chemical species.

23. (Currently Amended) A method of making a sensor array for selectively detecting and identifying a predetermined number of chemical species, comprising the steps of:

(a) providing an array of nanostructure sensing devices, each nanostructure sensing device comprising at least one nanostructure and at least two contact electrodes, wherein the at least one nanostructure provides electrical coupling between the at least two contact electrodes;

(b) providing a plurality of chemical jets wherein at least a portion of the plurality of chemical jets contains a reactant that can modify the selectivity for sensing of the nanostructures;

(c) addressing with at least the portion of the plurality of chemical jets at least the portion of the array of nanostructure sensing devices; and

(d) dispensing drops of the reactant from at least the portion of the plurality of chemical jets to at least the portion of the nanostructure sensing devices in the array of nanostructure sensing devices;.

24. (Original) The method of Claim 23, further comprising performing (a) through (d) repeatedly, using a different portion of the plurality of chemical jets and a different reactant each time, until there is a variety of selectivity for sensing within the array of nanostructure sensing devices such that each of the predetermined number of chemical species produces a measurably changed signal from the array.

25. (Original) The method of Claim 23, further comprising supplying energy to the reactant.

26. (Original) The method of Claim 25, wherein the energy is selected from the group consisting of ultraviolet radiation, thermal energy, and electrical energy.

27. (Original) The method of Claim 23, further comprising applying a characteristic voltage across the at least two contact electrodes in each of the nanostructure sensing devices in at least the portion of nanostructure sensing devices after step (d), the characteristic voltage causing initially a current flow through the nanostructures, and continuing to apply the characteristic voltage until the current flow decreases sharply, thereby introducing point defects into the nanostructures in a self-limiting reaction.

28. (Original) The method of Claim 27, wherein the point defects have selectivity for sensing chemical species.

29. (Original) The method of Claim 27, further comprising dispensing drops of a different reactant to at least the portion of the nanostructure sensing devices in the array of nanostructure sensing devices to promote attachments of molecules to the point defects on the nanostructures.

30. (Original) The method of Claim 29, wherein the molecules have selectivity for sensing chemical species.

31. (Original) The method of Claim 29, further comprising dispensing, in series, drops of a plurality of reactants to at least the portion of the nanostructure sensing devices in the array of nanostructure sensing devices to promote attachments of a series of molecules, thus forming structures extending from the point defects on the nanostructures.

32. (Original) The method of Claim 31, wherein the structures have selectivity for sensing chemical species.

33. (Original) The method of Claim 23, wherein the reactant is an electrochemical solution and further comprising:

(e) providing a plurality of counter electrodes, such that there is at least one counter electrode in contact with each drop of the electrochemical solution;

(f) applying a first voltage to the contact electrodes in at least the portion of the array of nanostructure sensing devices; and

(g) applying a second voltage, different from the first voltage to the plurality of counter electrodes in at least the portion of the array of nanostructure sensing devices while the first voltage is applied, thus effecting an electrochemical reaction between the electrochemical solution and the nanostructures within at least the portion of the array of nanostructure sensing devices.

34. (Original) The method of Claim 33, wherein providing a plurality of counter electrodes comprises providing a counter electrode, electrically isolated from the contact electrodes in at least the portion of nanostructure sensing devices.

35. (Original) The method of Claim 33, further comprising before step (c), providing in each nanostructure sensing device in at least the portion of the array of nanostructure sensing devices a pseudo-reference electrode.

36. (Original) The method of Claim 33, wherein providing a plurality of counter electrodes in step (e) comprises providing counter electrodes in at least a portion of the plurality of chemical jets and performing both steps (f) and (g) while the chemical jet is dispensing the drop of electrochemical solution.

37. (Original) The method of Claim 33, further comprising, in step (b), providing pseudo-reference electrodes in the chemical jets and performing both steps (f) and (g) while the chemical jet is dispensing the drop of electrochemical solution.

38. (Original) The method of Claim 33, further comprising performing steps (a) through (g) repeatedly, using a different electrochemical solution each time, until there is a variety of selectivity for sensing within the array of nanostructure sensing devices such that

each of the predetermined number of chemical species produces a measurable signal from the array.

39. (Withdrawn) The method of claim 30, wherein providing a plurality of counter electrodes in step (f) comprises providing counter electrodes in at least a portion of the plurality of chemical jets and performing both steps (g) and (h) while the chemical jet is in contact with the drop of electrochemical solution.

40. (Withdrawn) The method of claim 30, further comprising, in step (b), providing pseudo-reference electrodes in the chemical jets and performing both steps (g) and (h) while the chemical jet is in contact with the drop of electrochemical solution.

41. (Withdrawn) The method of claim 30, further comprising performing steps (a) through (h) repeatedly, using a different electrochemical solution each time, until there is a variety of selectivity for sensing within the array of nanostructure sensing devices such that each of the predetermined number of species produces a measurable signal from the array.

42. (Withdrawn) A method of making a system for selectively detecting and identifying a predetermined number of chemical or biological species, comprising the steps of:

(a) providing an array of nanostructure sensing devices, each nanostructure sensing device comprising a first nanostructure and at least two contact electrodes, wherein the first nanostructure provides electrical coupling between the contact electrodes;

(b) providing a counter electrode;

(c) submerging a portion of the nanostructure sensing devices in the array in an electrochemical solution;

(d) applying a first voltage to the contact electrodes in the portion of nanostructure sensing devices; and

(e) applying a second voltage, different from the first voltage, to the counter electrode, thus effecting an electrochemical reaction between the electrochemical solution and the first nanostructure in each nanostructure sensing device in the portion.

43. (Withdrawn) The method of claim 42, further comprising performing steps (a) through (e) repeatedly using different electrochemical solutions and applying different first voltages and second voltages until there is a variety of selectivity for sensing within the nanostructure sensing devices in the array such that each of the predetermined number of species produces a measurable signal from the array.

44. (Withdrawn) The method of claim 42, further comprising rinsing the electrochemical solution from at least the portion of the nanostructure sensing devices in the array after applying the second voltage.

45. (Withdrawn) The method of claim 42, wherein providing the counter electrode comprises providing a counter electrode in the first nanostructure sensing device in the array.

46. (Withdrawn) The method of claim 42, wherein providing the counter electrode comprises providing a counter electrode in the electrochemical solution.

47. (Original) A method of fabricating an electronic system for selectively detecting and identifying a predetermined number of chemical species, comprising the steps of:

(a) providing an array of nanostructure sensing devices, each nanostructure sensing device comprising at least one nanostructure and at least two contact electrodes, wherein

the at least one nanostructure provides electrical coupling between the at least two contact electrodes;

(b) submerging at least a portion of nanostructure sensing devices in the array of nanostructure sensing devices in a reactant;

(c) applying a characteristic voltage across the at least two contact electrodes in each of the nanostructure sensing devices in at least the portion of nanostructure sensing devices after step (b), the characteristic voltage causing a current flow through the nanostructures, and continuing to apply the characteristic voltage until the current flow decreases sharply, thereby introducing point defects into the nanostructures in a self-limiting reaction; and

(d) rinsing the reactant from at least the portion of the array of nanostructure sensing devices after the self-limiting reaction ends.

48. (Original) The method of Claim 47, further comprising supplying additional energy to the reactant.

49. (Original) The method of Claim 48, wherein the additional energy is selected from the group consisting of ultraviolet radiation, thermal energy, and electrical energy.

50. (Original) The method of Claim 47, wherein the point defects have selectivity for sensing chemical species.

51. (Original) The method of Claim 47, further comprising applying a different reactant to at least the portion of the nanostructure sensing devices in the array of nanostructure sensing devices to promote attachment of molecules to the point defects on the nanostructures.

52. (Original) The method of Claim 51, wherein the molecules have selectivity for sensing chemical species.

53. (Original) The method of Claim 47, further comprising applying a series of different reactants to at least the portion of the nanostructure sensing devices in the array of nanostructure sensing devices to promote reactions wherein a plurality of molecules attach and form structures extending from the point defects on the nanostructures.

54. (Original) The method of Claim 53, wherein the structures have selectivity for sensing chemical species.

55. (Original) The method of Claim 47, further comprising performing at least steps (a) – (c) repeatedly using different reactants and applying different voltages until there is a variety of selectivity for sensing within the array of nanostructure sensing devices such that each of the predetermined number of chemical species produces a measurable signal from the array.

56. (Withdrawn) The method of claim 54, further comprising applying a series of different reactants to the portion of the nanostructure sensing devices to promote reactions wherein a plurality of molecules attach and form a first structure extending from the first point defect.

57. (Withdrawn) The method of claim 56, wherein the first structure has selectivity for sensing chemical or biological species.

58. (Withdrawn) The method of claim 47, further comprising performing steps (a)-(c) repeatedly using different reactants and applying different voltages until there is a variety of selectivity for sensing within the array of nanostructure sensing devices such that each of the predetermined number of species produces a measurable signal from the array.

59. (Withdrawn) A method for identifying a plurality of chemical or biological species in a surrounding environment, comprising:

measuring a first signal from an array of nanostructure sensing devices before exposing the array to a surrounding environment, wherein the nanostructure sensing devices have selectivity for sensing chemical or biological species, the selectivity of a first nanostructure sensing device differing from the selectivity of a second nanostructure sensing device in the array;

measuring a second signal from the array of nanostructure sensing devices after exposing the array to the surrounding environment, wherein a significant change between the first signal and the second signal indicates detection of a species;

making correlations between known signal changes between the first signal and the second signal, which occur when known species are detected and observed changes between the first signal and the second signal as measured; and

interpreting the correlations to identify species in the surrounding environment.

60. (Withdrawn) The method of claim 59, wherein the signals are selected from the group consisting of electrical signals, optical signals, mechanical signals, and thermal signals.

61. (Withdrawn) The method of claim 59, further comprising applying and maintaining a first gate voltage to a first gate electrode associated with a first nanostructure sensing device in a first portion of the array before measuring the first signal from the first portion of the array and continuing to maintain the first gate voltage throughout measuring the second signal from the first portion of the array.

62. (Withdrawn) The method of claim 61, further comprising applying and maintaining a second gate voltage, different from the first gate voltage, to a second gate electrode associated with a second nanostructure sensing device in a second portion of the array before measuring the first signal from the second portion of the array and continuing

to maintain the second gate voltage throughout measuring the second signal from the second portion of the array.

63. (Withdrawn) The method of claim 61, further comprising applying a series of gate voltages to the first gate electrode associated with the first nanostructure sensing device in the first portion of the array and measuring the first signal and the second signal from the first portion of the array at each gate voltage in the series of gate voltages.

64. (Withdrawn) A method for detecting a plurality of chemical or biological species in an environment of interest, comprising:

providing an array of sets of nanostructure sensing devices, each set comprising a first and a second nanostructure sensing device, such that the first and the second nanostructure sensing devices both have a first selectivity for sensing;

providing shielding impermeable to at least the plurality of chemical or biological species to first nanostructure sensing device in each set;

allowing the second nanostructure sensing device in each set to be at least partially exposed to the plurality of chemical species;

measuring a first before signal from the first nanostructure sensing device before exposing the array to the environment of interest;

measuring a first after signal from the first nanostructure sensing device after exposing the array to the environment of interest;

measuring a second before signal from the second nanostructure sensing device before exposing the array to the environment of interest;

measuring a second after signal from the second nanostructure sensing device after exposing the array to the environment of interest;

comparing the first before and first after signals from the first nanostructure sensing device to determine a first signal change;

comparing the second before and second after signals from the second nanostructure sensing device to determine a second signal change;

making correlations between the first signal change and signal changes for nanostructure sensing devices having the first selectivity for sensing and having shielding impermeable to at least the plurality of chemical or biological species upon exposure to known species;

making correlations between the second signal change and signal changes for nanostructure sensing devices having the first selectivity for sensing and having at least partial exposure to the plurality of chemical or biological species upon exposure to known species;

interpreting the correlations to identify species in the environment of interest.

65. (Withdrawn) The method of claim 64, wherein the signals are selected from the group consisting of electrical signals, optical signals, mechanical signals, and thermal signals.